

Calculus 1 — Outline for Exam 1

Main ideas

- A. Limits (one-sided and two-sided) and connection to vertical asymptotes
- B. Continuity

Skills you should have

1. Be able to compute limits each of the following ways: *algebraically*, *graphically*, and *numerically* (by plugging numbers into a function and studying the outputs).
 - Be able to “simplify” limits if direct substitution yields $\frac{0}{0}$
 - Be able to create a table to analyze limits of the form $\frac{\text{NOT } 0}{0}$
 - Be able to work with piece-wise defined functions
2. Be able to determine if a function is continuous each of the following ways: *algebraically* or *graphically*.
 - This includes being able to find a value for a parameter in a piece-wise defined function to make it continuous (like we did in class and you are doing for homework)
3. Be able to determine the vertical asymptotes of a function.
4. Be able to state the definition of a function being continuous at a , which is that $\lim_{x \rightarrow a} f(x) = f(a)$ (and that both sides of the equality exist).

How to study

- I. Review core topics
- II. Work *lots* of problems all of the way through—focus on WeBWorK problems and Worksheet problems
- III. Practice doing several problems in a short amount of time
- IV. Come talk with me if you have any questions